CLAIMS

What is claimed is:

1. A communication system including a receiver for receiving at least one of a plurality of channels in a communication signal, the receiver comprising:

an adaptive matched filter for receiving communication signals producing a filtered signal by using a weighting signal;

a rake receiver for receiving the communication signals and a pseudo-noise signal generated for a selected channel and producing a filter weighting signal;

means for defining the filter weighting signal with a correction signal, said correction signal to produce the weighting signal used by said adaptive matched filter;

a channel despreader for said selected channel coupled to said adaptive matched filter output for despreading said filtered signal using the pseudo-noise signal generated for said selected channel to produce a despread channel signal of said selected channel;

a pilot channel despreader for a pilot channel coupled to said adaptive matched filter output for despreading said filtered signal using a pseudo-noise signal generator for said pilot channel to produce a despread pilot signal of said pilot channel;

a hard decision processor in association with a complex conjugate processor for receiving the despread channel signal of said selected channel and producing said correction signal; and

means utilizing at least said despread pilot signal for producing a phase correction signal which is applied to produce phase-corrected channel signals.

2. The communication system according to claim 1 further comprising a plurality of channel despreaders, each coupled to said adaptive matched filter output for despreading said filtered signal each using an associated pseudo-noise signal generator to produce a plurality of despread channel signals.

3. The communication system according to claim 2 wherein the number of channel despreaders is three.

4. The communication of claims 1 where said means is a phase-locked loop.

5. The communication system according to claim 4 wherein said phase-locked loop phase correction signal is at a chip level and is applied to demodulated communication signals.

6. The communication system according to claim 2 wherein each of the plurality of channels is a complex, bi-phase modulated signal comprised of symbols including in-phase and quadrature components representing data, said hard decision

processor compares each despread channel signal symbol to one of four possible quadrature constellation points and assigns each of said symbols to a nearest constellation point, and said complex conjugate processor derotates each of said symbols by determining a complex conjugate of each of said assigned points to produce said correction signal.

7. The communication system according to claim 4 wherein said phase-locked loop further comprises a plurality of inputs corresponding with said plurality of channel despreaders.

8. The communication system according to claim 6 wherein said phase-locked loop further comprises:

a hard decision processor in association with said complex conjugate processor with a local feedback loop for each of said corresponding channel despreader inputs to produce an error estimate signal for a respective channel signal;

each said error estimate signal and said despreader pilot signal coupled to an inverse tangent processor to produce a corresponding phase correction signal; and

said respective channel phase correction signal and pilot phase correction signal coupled to a maximum likelihood combiner producing a combination correction signal coupled to an integrator to produce said phase correction signal.

9. The communication system according to claim 7 wherein the number of channel despreaders is three.

10. The communication system according to claim 1 wherein said means is a phase-locked loop and the phase correction signal is at a symbol level and is applied to said filter weighting signal and to said despread channel signals of said channel and pilot channel despreaders.

11. The communication system according to claim 9 further comprising a plurality of channel despreaders, each coupled to said adaptive matched filter output for despreading said filtered signal using an associated pseudo-noise signal generator to produce a plurality of despread channel signals.

12. The communication system according to claim 10 wherein the number of channel despreaders is three.

13. The communication system according to claim 10 wherein said phase-locked loop further comprises a plurality of signal inputs corresponding with said plurality of channel despreaders.

14. The communication system according to claim 12 wherein said phase-locked loop further comprises:

a hard decision processor in association with a complex conjugate processor with a local feedback loop for each of said plurality of signal inputs, each producing an error estimate for a respective channel signal;

each of said channel error estimates and said despreader pilot signal coupled to an inverse tangent processor outputting a channel phase correction signal; and

said channel phase correction signal and said pilot phase correction signal coupled to a maximum likelihood combiner producing a combination correction signal coupled to an integrator to produce said phase correction signal.

15. The communication system according to claim 13 wherein the number of channel despreaders is three.